Finance on a Small Planet

GTI Roundtable

April 2014

The endless growth of finance capital is fundamentally at odds with the finite scale of our biosphere. How can we resolve this contradiction? John Fullerton underscores the need to redesign the finance system to support regeneration and accommodate limits, and our panelists explore how to do so.

Contributions

Opening Essay

Roundtable

Author's Response

Limits to Investment: Finance in the Anthropocene

John Fullerton

The true nature of the international system under which we were living was not realized until it failed.
Karl Polanyi

Abstract: A transition to a sustainable economy requires not only population stabilization, breakthroughs in resource productivity, and checks on material consumption, but also constraints on aggregate investment. Built into the DNA of finance is the goal of optimizing relatively short-term returns on investment, which, when successful, induces exponential growth in the aggregate stock of financial capital. When that expanding stock of financial capital is then reinvested, it spurs ever-increasing demands for natural resources and pressure on waste sinks. The contradiction between the finite scale of the biosphere and the endless growth of finance capital will be resolved either through crisis or, as advocated here, through foresight and remedial action. Shifting the economic system demands a fundamental transformation of finance, at least for the real investment decisions of the largest actors in the economy. We must view this profound shift as a critical national and global security priority that will require unprecedented intervention by governing institutions on the public's behalf.

Context

The egregious offenses of modern finance need little elaboration. The finance-induced Great Recession—still a depression in parts of the European Union—has been causing oppressive pain and suffering, with multi-generational consequences, including increased wealth inequality, cascading throughout the global economy. If we can peer beyond the human wreckage, we may glimpse a silver lining: the lingering economic crisis has provided even mainstream economists a reason to question as never before the very foundations of our finance-driven economic system. Just as dangerous as rogue banks too big to fail or to govern—and the predatory casino finance that has become their stock-in-trade—is the growth imperative that drives the modern economy beyond the resource and waste sink limits of the biosphere.

The lingering economic crisis has provided even mainstream economists a reason to question as never before the very foundations of our finance-driven economic system.

Finance's most important practical functions in the real economy are the transformation of savings into investment and the credit creation process of the banking system. The reorientation of the flow of real investment (not to be confused with financial asset speculation) is the bridge to, and the steering mechanism for, a Great Transition to an economy that serves people while respecting the ecosphere's physical limits. For now though, the same planetary boundaries that dictate limits to growth also imply limits to investment, since investment fuels growth. No economic system in the history of civilization has ever had to contemplate such a constraint. How much and where large economic actors like multinational corporations and nation-states invest will significantly determine the quality of the economic system of the future and, given present social and ecological stresses, our collective well-being and global security. As a consequence, real investment choices must become a central concern of global governance, notwithstanding the many failings of governing institutions.

The Impact of Investment

The economy, as measured by Gross National Product (GNP), includes consumption, investment, government spending, and net exports, often rendered as a simple equation:

$$GNP = C + I + G + netX$$

Concern for sustainability has typically focused on consumption since it represents the largest share of the economy (70 percent in the US, less in emerging economies like China and India). However, capital investment has a disproportionately large impact because of the long-term implications it has on future consumption through "technology lock-in" and the embedded feedback loops of business enterprise. For example, if an automobile company constructs a factory to build SUVs, then its advertising and sales efforts will focus on increasing the demand for these SUVs.

Distinguishing between financial investment and real investment is critically important. The former has attracted considerable attention in the investment community: witness the debates about the impact of "SRI" (socially responsible investment) and related "ESG" factors (environmental, social, and governance) on corporate behavior and investment performance. Yet financial investors and speculators—groups that increasingly blur together—are typically far removed from the real capital investment decisions of the large public corporations that, to a significant extent, drive and shape the material economy. Even some leading practitioners of ESG and sustainable investment acknowledge that ESG is primarily a risk mitigation strategy for financial investment portfolios, rather than a transformational strategy for the real economy.[1]

Walmart's continued investment in new superstores matters much more than its subsequent efforts to green its supply chain, notwithstanding the importance of that work.

The top 1,000 global corporations represent half of the total market value of the world's 60,000 public companies and, undoubtedly, an even greater share of capital investment budgets.[2] What demands our attention, therefore, are the decades-long impacts of the capital expenditure decisions of these largest corporations, together with the impacts of large government capital expenditures like investments in infrastructure. Corporate reporting on social and environmental performance, however, tends to focus on supply chain impacts rather than the initiating impact of the capital expenditures that create these supply chains. To take one of the world's largest corporations as an example, Walmart's continued investment in new superstores matters much more than its subsequent efforts to green its supply chain, notwithstanding the importance of that work.

Shareholder engagement that focuses on capital investment decisions will inevitably confront pushback rooted in concerns about long-term growth, competitiveness, and share price. Corporations make their investment decisions using an internal rate of return framework that compares a project's expected financial return with the firm's cost of capital. Because of the way finance discounts the future, corporations approve capital expenditures that achieve financial return targets with time horizons that rarely exceed ten years and typically ignore "externalities," including those with serious long-term risks. Concerns about the systemic impact on social and natural capital rarely enter the analysis. They are "managed" afterward, if at all. This short-termism is compounded by the even shorter-term horizon of financial investors and speculators preoccupied with quarterly earnings and higher valuations in the stock market

Policy responses, moreover, rarely occur until after enterprise investment decisions have already been made. A company is free to build a cigarette industry, and only afterwards does society respond with labeling and advertising policies that, at best, partially mitigate the damage. Today, unprecedented ecological risks make this reactive approach unacceptable. Many forward-thinking CEOs and policymakers fully understand this new reality yet feel powerless to change it.

From the Firm to the System

An adequate response to the challenge of a world at risk requires turning from the firm-level investment decisions to the economic system as a whole.[3] Along with genuine contributions to human progress, our economic system has produced staggering growth in financial wealth. Financial assets in the US have doubled as a percentage of GDP since 1980.[4] This should give us pause, rather than reason for celebration.

The drive for exponential returns on financial capital pushed finance to shorter-term and more speculative activity at the same time as physical resource limits to growth began to impose constraints. This has come at an alarming cost. Of the twenty largest countries in the world, constituting nearly three-quarters of global GDP, all but Japan suffered per capita losses in their natural capital stocks between 1990 and 2008.[5] Although natural capital can be eroded for decades, we already appear to have passed safe limits, most notably the atmosphere's limit to absorb carbon waste.[6]

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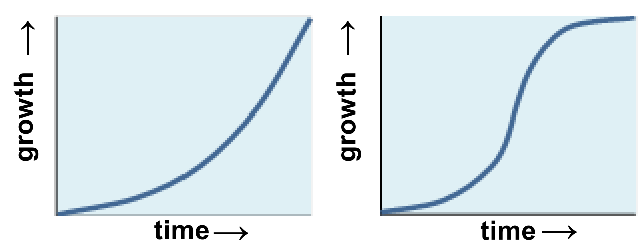
In the "full world" context in which we now find ourselves, quantitative limits to aggregate material growth logically imply limits to investment. Our challenge is now to determine where we invest and what we grow. Energy and material efficiency in the industrialized world and investments in support of healthy lives with dignity for the less developed economies are obvious top priorities.[7] Investments in fossil fuel-hogging luxury yachts and indoor skiing in the Dubai desert are not.

Continuing the pursuit of exponential growth of financial capital by drawing down both social and natural capital is unsustainable. Simple arithmetic demands that it will eventually generate some combination of financial, social, or ecological collapse. With the Great Recession as a wake-up call, we can begin to seek ways to shift the growth trajectory of financial capital from an exponential curve to a more sustainable (sigmoidal) growth curve as found in natural systems.

Pathways for the Growth of Financial Capital



Exponential (unsustainable) **Sigmoidal (sustainable)**

Thriving individual enterprises—particularly the ones needed to drive the economic transition—can and will continue to grow and deliver exponential returns to investors, at least for a while. However, even accounting for unanticipated efficiency gains in the energy and material intensity of the economy, the aggregate stock of financial capital will need to pass through a critical inflection point to declining rates of growth.[8] This

transition can occur through some combination of the following developments, many of which are already underway:

- a declining aggregate rate of return on invested capital,
- a systematic financial asset devaluation,
- the debasing of currencies through inflation,
- defaults leading to voluntary or involuntary debt extinguishment,
- an unprecedented scale of private philanthropy to recycle financial capital back into social and natural capital,
- a large-scale voluntary or policy-induced reinvestment of profits by the corporate sector into natural and social capital, and
- an increase in taxation to allow the public sector to recycle financial capital back into natural and social capital on behalf of vital public security interests.

We can choose to lead this transition to reduced growth in the stock of financial capital, while augmenting the stocks of social and natural capital, or risk having it forced upon us by nature's limits, social upheaval, or—most likely—both at the same time.

Not only are we in ecological overshoot, but we are no doubt in "financial overshoot" as well.

The Way Forward

The scale and complexity of the required shift in understanding is unparalleled, and time is not on our side. Not only are we in ecological overshoot, drawing down our life-sustaining stock of natural capital and putting social cohesion at risk because of growing inequality and related social stresses, but we are no doubt in "financial overshoot" as well.[9] Financial overshoot exists to the extent that financial assets—both stocks and bonds—are valued by a marketplace that has not yet fully accounted for the multi-decade adjustment process ahead in which honest pricing of externalities and the real resource constraints of planetary boundaries constrain aggregate growth rates. If this transition is left unmanaged, the feedback loops of financial asset valuation adjustments into the real economy could unleash chaos as we now know all too well.

Three interconnected solutions are apparent, all immensely challenging. First, we can work within the current neoliberal economic paradigm to shift the flow of investment by internalizing the costs of the externalities that we currently ignore. Second, business, government, and large pools of private capital can begin leading through enlightened real investment and integrated philanthropy even before a world of accurate accounting using honest pricing is realized. Third, the public can demand a new set of rules and regulations—some local, some regional, some global—to establish the necessary guardrails and mandates for the transition.

Getting prices right: Commercial enterprises must begin to pay the true social and environmental cost of their operations. Establishing sound measurement procedures and mandatory transparency is an essential first step, and many integrated reporting

initiatives show promise despite difficulties in enforcement.[10] Critically, however, the presumption that we can put a correct price on many of these costs is naïve and dangerous. Some costs represent harms that can be mitigated, while others represent wrongs that never can. The value of a life in a life insurance policy is certainly not the true value of that life. This same principle applies to the value of healthy ecosystem functioning—not "a life," but "life"—which is literally priceless. Getting prices "right" to the extent possible is a necessary, but insufficient, response.

Enlightened private behavior: Progress is underway as smart companies and communities are investing in resource productivity and alternative energy to save money and accelerate the shift to a regenerative economy. Experimentation with forms of enterprise that better align all stakeholder interests, from partnerships and cooperatives to "for-benefit" corporations (B-Corps) and innovative forms of social enterprise, is accelerating.[11] A small group of entrepreneurs and enlightened stewards of capital are leading the way, albeit at a pace too slow and a scale too small. Could a group of large actors including businesses, governments, sovereign wealth funds, pension funds, foundations and endowments, and high net worth families—unshackled from speculative capital markets no longer fit for purpose and using innovative investment methods—work collectively to alter the course and quality of the economy through their aggregate real investment decisions and approaches?[12] Or will the emergent bottom-up, distributed innovation fueled by crowdsourcing scale to such a degree that it impacts the global economic system?

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The answer remains unclear. On the one hand, climate stabilization demands that we not burn the vast majority of known fossil fuel reserves already sitting on company balance sheets, yet the energy industry continues to invest hundreds of billions of dollars per year in search of more.[13] On the other hand, real progress is afoot within the most progressive corporations, without which meaningful and peaceful economic transition would be difficult, if not impossible. A growing community of wealthy families, foundations, and sovereign wealth funds are engaging in "impact investing" and philanthropy to harmonize ecological and social impact with financial returns. But the critical large-scale expansion of this integrated approach, particularly the recycling of financial capital back into natural capital, has yet to emerge.

Public policy responses: No realistic assessment of the transition ahead, even by the most steadfast advocates of technology-driven and market-based solutions, can fail to see the primacy of the public sector's role in catalyzing this unprecedented shift. We will need new regulatory frameworks and incentives to help steer an economic transition more profound than the Industrial Revolution. Economically obvious but politically difficult policies like carbon caps and/or taxes must contribute to a portfolio of tools for curbing greenhouse gas emissions along with expanded research and development in clean technology. Action to remove subsidies from fossil fuel-based energy and agriculture and shift them to drive improved resource productivity and accelerated growth of renewable energy and sustainable agriculture is long overdue.

However, a larger and more uncomfortable requirement looms. In the full world of the Anthropocene, our notions of freedom will need to adjust to new realities.[14] Simply encouraging so-called "green investment" will not be enough if we do not curtail investment that has negative and even catastrophic impacts. Deciding the qualitative "what" and the absolute scale of investment must become a matter of the public interest. Logic then points to a fresh and expanded need for governance, even though our confidence in government at the moment is low (or nonexistent) because of valid concerns about competence and corruption. New and effective approaches to global and regional governance, likely using cities as the central nodes of coordinating power, are essential.

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In the crises ahead, the impossible will become the inevitable. The belief in the unencumbered freedom of large corporations and other large economic actors to make investment decisions that may have catastrophic and irreversible consequences must now be challenged. Activists fighting deforestation in the Amazon and the construction of the Keystone XL pipeline are showing the way forward. We must begin to accept some form of public interest influence over both the scale and direction of private and public investment capital flows as vital to our national and global security interests.

Opponents will inevitably attack this idea as socialism or worse. But it addresses a profoundly different issue than concerns about the ownership of the means of production. Given the linkage between investment and material throughput of the economy, how we choose to invest will determine to a significant degree whether we follow a path to a Great Transition or continue on the present course to societal destabilization and environmental collapse.

We can look to the public utility sector's (imperfect) permitting process for precedents of regulatory engagement in capital investment decisions at regional scale.[15] Numerous state and multilateral actors, such as the World Bank, already influence the course of investment capital flows globally, although not always in a positive direction. The idea is not new, but the potential scale and scope are, particularly in regard to the need to constrain certain investments like the unrestrained extraction of coal.

Central banks are obvious candidates for radical institutional reform to encompass this new imperative. Central banking in the Anthropocene might well entail qualitative mandates regarding investment and credit flows in addition to conventional inflation and full employment mandates. We must also tackle thorny questions regarding the public and private nature of banking institutions, the credit creation function which the banks now manage under a fractional reserve system, and the alignment of the mission of banks with public purpose rather than private speculation at public expense.

We will achieve our greatest impacts if we can rein in and influence the capital investment decisions of the largest corporations and the G-20 governments, as well as the credit decisions of the fifty largest global banks and financial intermediaries. Supporting public policies can achieve this while allowing more decentralized entrepreneurial energies to flourish at appropriate scale within a new macro framework. If mega-firms in the private sector fail to act in accordance with this overriding public interest, or prove to be ungovernable, we may have no alternative but to nationalize and manage them in the public interest, as Milton Friedman's revered teacher H.C. Simmons well understood in his own context.[16] Although such a suggestion is fraught with huge challenges, we must look head-on at the scale and scope of the transformation we need, particularly in the fossil fuel, agriculture, and banking industries.

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Can such unprecedented global oversight, even if limited to the most critical economic actors, be practical without harming the global economy? We have no choice but to try, for business-as-usual will lead to ecological and social collapse—and, of course, the collapse of the economy as well. There will inevitably be short-term efficiency and growth trade-offs in exchange for system resilience. The rich countries will need to find prosperity without growth in material resource throughput—in fact, with an immense increase in material efficiency.[17] At the same time, the developing world will need to foster human and ecological well-being through more intelligent technology choices than currently deployed in the North.

The careful, holistic management and monitoring of aggregate real investment flows are an inevitable part of the economy of the future and the challenging transition to it. This will require new global oversight mechanisms, informed by the best scientific understanding of critical ecosystems and empowered by sovereign nation-states and global corporations, to define and enforce a "safe operating space" within which our innovation-driven, free-market system can thrive.[18] Like the canvas for a painter, boundaries will provide the discipline that enhances creativity. The extreme degree of financial speculation that defines the financial landscape today has no place in such a future and must be curbed immediately.

Large-scale investment decisions simply must be considered a vital part of the public interest. The sooner we acknowledge the implications of this immense challenge the better.

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About the Author

John Fullerton is the Founder and President of the Capital Institute , a recognized new economy thought leader, and an active "Impact" private investor. Previously, he was a Managing Director of JPMorgan, where he managed multiple capital markets and derivatives businesses around the globe and then ran the venture investment activity of LabMorgan as Chief Investment Officer through the merger with Chase Manhattan Bank in 2001. John served as JPMorgan's representative on the Long Term Capital Management Oversight Committee in 1997-98. He is a co-founder and director of Grasslands, LLC, a holistic ranch management company with the Savory Institute; a director of New Day Farms, Inc., the New Economics Institute, and Savory Institute.org; and an advisor to RSF Social Finance, Richard Branson's Business Leader's Initiative ("B Team"), and Armonia, LLC.

Roundtable

Gar Alperovitz

John Fullerton's contribution is both courageous and extremely important. If we are to deal in any serious way with the crisis we face, some form of public planning must guide investment decisions, especially of the largest economic institutions.

It was the conservative leaders of the Chicago School of Economics who stressed that many very large corporations (like the ones Fullerton identifies) simply cannot be regulated effectively. They understood better than liberal economists that "regulatory capture" was a routine practice, built into the institutional power dynamics. They also understood that, as with AT&T and the various components of Standard Oil, breaking up large corporations commonly lasted a very short time: given market and institutional dynamics, they all but inevitably regroup. The challenge put by the old conservatives, though not aimed at the growing ecological crisis, has its modern analogue—and question: Does anyone really believe that "regulation" can achieve what John Fullerton asks and what is self-evidently required—namely, serious public management of the investment decision?

Furthermore, the central dynamic of any private for-profit corporation that must go to Wall Street for financing is inherently one of growth. Staying within ecological limits, however, requires that investment decisions not be driven by such criteria. In other words, many such entities must essentially become not-for-profit "utilities" to achieve Fullerton's goal.

Consequently, John Fullerton's goal (and ours) can only be achieved by the selective transformation of certain critical corporations into public entities of one kind or another. Which firms and what forms then become questions of great importance.

In light of that conclusion, I'd like to raise four related points:

(1) Though Fullerton rightly defines the issue as global, inevitably the challenge comes down to earth in specific nations—the most important of which being our own. Consequently, we (and

others in other countries) must develop explicit strategies that clarify the kinds of firms that are critical and how a de facto planning system would operate.

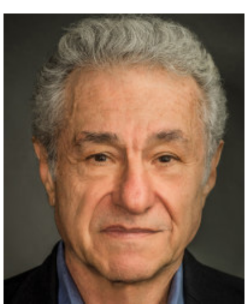
(2) This requirement, in turn, suggests the need to explicitly develop scenarios in specific nations that also build towards global solutions. Put another way, identifying the top 1000 global corporations would logically require as a second step scenarios in each important nation to move towards converging power relationships capable of achieving what Fullerton urges.

(3) If some form of genuine democratization of ownership is a necessary requirement, then building towards this idea in a meaningful way, nation by nation, is also a requirement.

(4) If a planning system capable of achieving what Fullerton urges is to be democratic in any nation (and most importantly our own), a thoroughgoing approach must also build from the bottom, so that citizen involvement is both possible and effective.

The spirit of such a vision can be traced back to Alexis de Tocqueville and John Stuart Mill, who best understood the importance of getting things right at the community level. Here is Tocqueville: "Local assemblies of citizens constitute the strength of free nations. Municipal institutions are to liberty what primary schools are to science; they bring it within the people's reach, they teach men how to use and how to enjoy it." And here is Mill: "We do not learn to read or write, to ride or swim, by being merely told how to do it, but by doing it, so it is only by practicing popular government on a limited scale, that the people will ever learn how to exercise it on a larger."

About the Author



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Herman Daly

This is an admirable article, brief and well-aimed at the problem of bringing the symbolic world of finance into balance with the biophysical world of ecology. I would like to make two observations and raise one question.

(1) Material throughput and the public interest

Given the linkage between throughput and investment, the limits we place on aggregate throughput will largely determine how we invest our surplus. Reduced depletion, for instance, will lead to more investment in recycling and product durability. A reduced physical scale of the macro-economy will also constrain the scale of physical damage resulting from bad decisions and demand that we pay more attention to resource efficiency and social direction. Brazil is now having riots because students and workers want investment in education and public transport, not soccer stadiums for the World Cup and the Olympics. The government of course says growth will provide both, no choice is needed. Demonstrators are tired of this lie. If the investment budget had been limited by savings, then the reality of either/or could not be wishfully displaced by the political fantasy of both/and.

(2) Credit Creation

Transformation of savings into investment is certainly important, but the credit creation process is where the problem lies and, thus, warrants more specific consideration. The classical balance of saving and investment poses significant constraints on investment and growth. Every dollar loaned should be a dollar previously saved, as a 100% reserve banking system requires. In addition to restraining growth, it would also channel it into the most productive investments. The 100% reserve idea, or "Chicago Plan," has an excellent intellectual pedigree (Frederick Soddy, Frank Knight, Irving Fisher, and others in the present, including IMF economists Benes and Kumhof, and former

Congressman Dennis Kucinich). In any case, money is the very basis of finance, and whether we choose private interest-bearing money or public non-interest-bearing money at least deserves discussion.

(3) Interest Rates and Economic Growth

A high interest rate restricts the volume of investment but allocates capital to the most productive projects. A low or indeed zero interest rate, maintained by quantitative easing, increases volume but allows investment in practically anything, thus increasing the probability that growth will be uneconomic. Shall we push growth to maintain full employment, even after growth has become uneconomic? Or shall we back off from growth and seek full employment and distributive equity by job sharing and reallocation toward leisure and public goods?

About the Author

Herman Daly was an ecological economist and Emeritus Professor at the University of Maryland, School of Public Policy. From 1988 to 1994, he was a Senior Economist in the Environment Department of the World Bank. Prior to that, he was a professor of economics at Louisiana State University, where he taught for twenty years. He has served as Ford Foundation Visiting Professor at the University of Ceará (Brazil), Research Associate at Yale University, Visiting Fellow at the Australian National University, and Senior Fulbright Lecturer in Brazil. He was co-founder and associate editor of the journal *Ecological Economics*. He wrote extensively on theorizing the steady-state economy and co-developed the Index of Sustainable Welfare. He held a PhD from Vanderbilt University.

Marjorie Kelly

I want to commend John Fullerton for raising the heretical question of limits to investment. This is an issue as fundamental as limits to physical growth, and far less understood. The real purpose of capitalism is infinite growth in capital; it is a system biased toward capital's needs. We as a culture have laid bare other biases like sexism and racism, but we have yet to, as a people, broadly understand the bias toward financial wealth and power inherent in capital-ism. This bias is both a system of thought and values, and a system of institutional structures that uphold those values.

The underlying systemic structure of every economy is ownership – a cultural and legal construct that defines who possesses economic power over enterprise and who has the legal right to extract wealth. Today, we live with Wall Street ownership, where the vast majority of economic activity is conducted through publicly traded corporations, with ownership shares trading on public stock markets, and where the financial elite also controls the political process. Today, ownership is on autopilot, with the aim of maximizing returns to shareholders designed into the structures of governance—including boards of directors, voting rights, financial statements, and the frame of law. Capital bias is also reflected in laws and court cases. John Fullerton's piece helps us see that the demands of capital lie at the heart of the institutionalized growth mandate.

What remains to be developed further are the social consequences of this system, particularly the effect on labor. If overall economic growth is sluggish, corporations increase profit by extracting more from labor. This can mean "increased productivity" - a benign term that today too often masks a harsh reality, where workers work harder, produce more, but do not share in the gains. Paying as much as possible to capital, and as little as possible to labor, is built into the design of the income statement. It often means layoffs, outsourcing jobs abroad, fighting unions, and decades of stagnant wages and high unemployment, even as the wealth of the financial elite soars. These are, in fact, among the fundamental aims of capitalism: to maximize gains for capital and to minimize gains for labor. That's capital bias.

To understand a world without this bias, we can look to an employee-owned firm like John Lewis Partnership, whose employees have a vote for the board and receive approximately 40% of profits every year in direct profit-sharing bonuses. Cooperatives also can behave differently; in the Basque region of Spain home to the Mondragon Cooperative, there is substantially lower unemployment because Mondragon deliberately avoids layoffs and instead finds jobs for redundant employees within the larger system of companies.

There are alternative social architectures available, and many are already up and running. We need to move more systematically to grow these alternatives. That begins with the recognition that institutionalized capital bias is at the heart of our system. John's piece goes a long way toward building that awareness.

About the Author

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Hunter Lovins

John Fullerton's piece is the best I've read on the topic. His observation that where money is spent is even more important than what purchases are made is blindingly obvious now that he's said it. So is his point about how a company invests is more important than how it manages its supply chain.

That said, I want to raise a few quibbles.

Fullerton says that most CSR, SRI, etc., is really just risk mitigation. Serious implementation of sustainability by corporates is a lot more than risk management. Just as mainstream economists are having existential crises, so, too, are corporate leaders. A growing number recognize that they had a hand in creating the crises and that they are the last man standing to deal with them. As Unilever CEO Paul Polman puts it, "If business is to regain the trust of society, it must start to tackle the big social and environmental issues that confront humanity, especially at a time when governments seem increasingly to be caught in shorter and shorter election cycles and have a hard time internalizing the global challenges in an increasingly interdependent world....Stepping up to the plate is not only the right thing for business to do from a moral perspective, but it is also in our economic self-interest." He's right. Fifty-one separate studies from the likes of those wild-eyed environmentalists at Goldman Sachs show that the leaders in environmental sustainability, social responsibility, and good governance are financially outperforming their more unsustainable competitors.

And if behaving sustainably *is* better business, then Fullerton's first and second strategies are both more attainable and, as he acknowledges, insufficient. Yes, internalizing externalities is important, but we need to do more than just full cost accounting. We should use every bit of leverage we have in the existing system, and with business leadership to drive change. Yes, policy matters. Yes, government has a role. But Fullerton has taken the refuge of every disillusioned businessman: oh,

government will solve it. No, it won't. If we could get the sorts of policy prescriptions he puts forth, we would not need them because we would already have a functional government. We don't. Congress is deadlocked. The EU is in a panic - rightly so, as the German bankster-driven austerity is a recipe for ruin. World leaders took a pass on Rio+20 and are unlikely to put in place a post-Kyoto climate agreement any time soon.

What we really need, as Fullerton has written and spoken of elsewhere, is the Regenerative Economy. So he should do us all a favor and kindly finish writing that paper. Then we can really have a conversation about solutions to the issues he raises here. These issues require a rethinking of essentially every part of business as usual.

About the Author

Hunter Lovins is President of Natural Capitalism Solutions. NCS helps companies, communities, and countries from Afghanistan to New Zealand implement more sustainable business practices profitably. She has written hundreds of articles and 14 books. Her latest, *Creating a Lean and Green Business System*, won the 2014 Shingo Prize. A founder of the field of Sustainable Management, she is a professor of business at Bainbridge Graduate Institute and Bard College, a Regents' Lecturer in Mechanical Engineering at UC Berkeley, and a Master at the DeTao Masters Academy in Beijing. She has won dozens of awards, including the European Sustainability Pioneer Award and the Right Livelihood Award (the alternative Nobel). *Time* Magazine recognized her as a Millennium Hero for the Planet, and *Newsweek* called her a Green Business Icon.

Author's Response

Response to Comments

Marjorie Kelly is right to elevate the social consequences of contemporary capitalism to at least parity with the planetary boundaries and the associated limits to investment. Ultimately, we need to understand the social and ecological imperatives as parts of the same whole system challenge. Although I agree that there are practical and ethical limits to both material throughput and inequality/unemployment, and that finance's "capital bias" is at the root of both issues, they are not equivalent "limitations." The social (shared human well-being) is dependent upon the biophysical, and not the other way around—unless we want to share equitably in an ecological catastrophe and call that success. Limitations on investment will make harmonizing the competing stakeholder interests much more challenging in the years to come—a constraint we have never faced in the past, and yet still failed to achieve a shared well-being. Like wasting water in the prosperous suburbs is different than wasting water in a lifeboat, this issue will create flash points of intense emotion and undoubtedly conflict. To take an optimistic view, perhaps when this reality sets in, we will have our greatest chance ever to realize that these are not in fact "competing" interests at all.

As Gar Alperovitz noted, we need more government intervention in markets as the early Chicago School economists predicted, and for a new reason they could not have imagined, namely the aggregate economic activity is breaking the planet. Yet we have a dysfunctional federal government in the United States, still the leading economy in the world. Certainly this leads us to conclude that fixing democracy is inextricably linked to resolving the limits to investment conundrum and any realistic shot at transition to what we like to call a regenerative economy. This is why the "new story" work of the new economy movement is so important. Without a new story, I do not see us creating a suitable prize for the political process to embrace and pull itself out of the current stalemate.

However, I have to disagree with his presumption regarding the "central dynamic" of a for-profit corporation that (a) it must go to Wall Street and (b) it must be driven by growth. While certainly

understandable, this thinking is a reflection of our being trapped in the current speculative Wall Street paradigm. There is no reason that a mature business in a mature industry, for example, could not carry on profitably for a long time without growing. Such a mature stable business has the characteristics of a financial annuity, a highly attractive stream of cash flows for real investors like pension funds. And reconnecting true ownership and the responsibility that goes with it (impossible in today's short-term capital markets) is a central objective. As I noted, the Evergreen Direct Investing method offers an example of a macro scale alternative that enables stewardship-minded investors to own profitable mature companies without forcing them to pursue exponential growth.

Regarding Hunter Lovins's point, I have a love/hate relationship with the premise that business is the only institution capable of meeting the sustainability challenge. As a business person myself, I get it, but I do fear such a belief is a symptom of our twenty-first century ideological belief and a reflection of our justifiable distrust in government, at least in this country. One part of government that is "pretty effective" at its mission is the military. I am increasingly of the view that the "great transition" is so great that we need to think of it as a military challenge, not requiring weapons, but requiring mission-driven (not just profit-driven), rapid mobilization and deployment of resources—and, yes, some sacrifice—on an unprecedented scale. At the very least, it will require constructive partnership with government policy such as what we have seen in Germany and South Korea. There are simply too many constraints on businesses, first and foremost being "Wall Street," for them to do it on their own.

I have no doubt that many corporations large and small are making material progress in reducing and at times even eliminating the unsustainable practices of business as usual. They deserve our applause and support. Similarly, I do not doubt that some senior executives are having existential crises as they recognize how challenging planetary boundaries are and will become to their business models. But these epiphanies are not frequent enough, nor deep enough, to transform much of the well-entrenched short-term bottom line business focus, particularly in a challenging economy. And such epiphanies remain largely absent from the dominant financial players in the economy.

I have pondered the practical possibilities of throughput limits as opposed to investment and consumption limits, the point raised by Herman Daly, but came up without anything remotely satisfying. My purpose here, however, is simply to illuminate the need to limit investment (qualitatively and, depending on these qualities, likely quantitatively as well), not just consumption. As I suggest, that

investment triggers positive feedback loops (advertising) that make limiting consumption very difficult. Attacking the issue at the point of investment decision thus becomes important. From the perspective of political will, or just human will, I am not sure which way would be easier. However, if I accomplish only one thing, it is to put investment on the table and invite people to think about the implications and practical challenges of limits to investment.

Of course, as Daly notes, the credit creation process is also important, but I would contend that for the large-scale capital investment decisions which must be our primary focus, the equity investment comes before the credit creation. For example, if a company wants to build a factory or an airplane, or a building, or drill for oil offshore, before a bank will lend (credit creation) or a bond can be sold (not credit creation in this case), the equity capital of the sponsor comes first. This is generally true for small-scale credit creation as well, such as the need for a down payment before getting a mortgage. The equity investment, I would suggest, is the gating item and high leverage point of intervention.

With respect to the money system, the Chicago Plan, and 100% reserve requirements which would take away the credit creation function from the banks and leave them with the credit allocation function alone, I have chosen not to tackle that topic other than to flag it in this short paper. However, these are vital questions with intriguing possibilities, even more so when combined with the "Modern Monetary Theory" ideas of Randall Wray and Stephanie Kelton. My own thinking on these enormous questions is incomplete to say the least, but I would suggest that we need a monetary system that is less uniform than either the present system or a system of 100% reserve requirements, regardless of the particular context. For example, a local bank in rural Kansas (or rural Brazil) with limited local savings to recycle provides a vital benefit to its community by having the ability to create credit, if responsibly done. On the other hand, the unbridled capacity of JPMorgan or Goldman Sachs to supply credit to speculators directly through margin lending and indirectly via structured derivatives has become destabilizing to the global economy, as we have seen, with horrendous consequences. Less apparent, but more destructive in the long run, is the use of that same unbridled credit creation function to finance, for example, mountaintop removal coal mining (or any coal mining for that matter) or job-destroying leveraged buyouts that have no purpose beyond speculation for the benefit of equity sponsors. Context matters, and there are likely no one-size-fits-all solutions, including for the inadequate monetary system we have today.